

**(43) Date of A Publication 03.01.1996**

**GB 2 290 475 A**

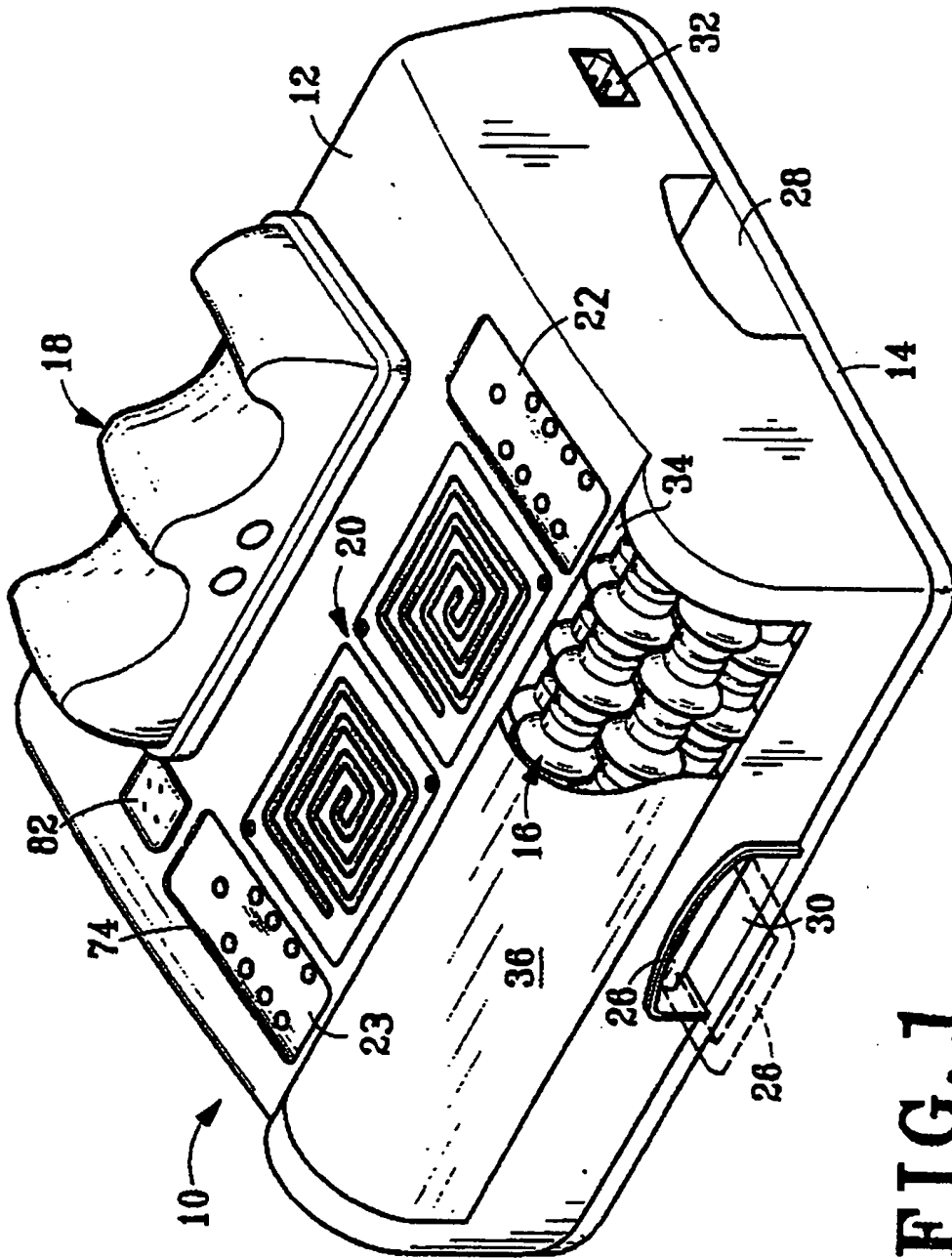


FIG. 1

FIG. 2

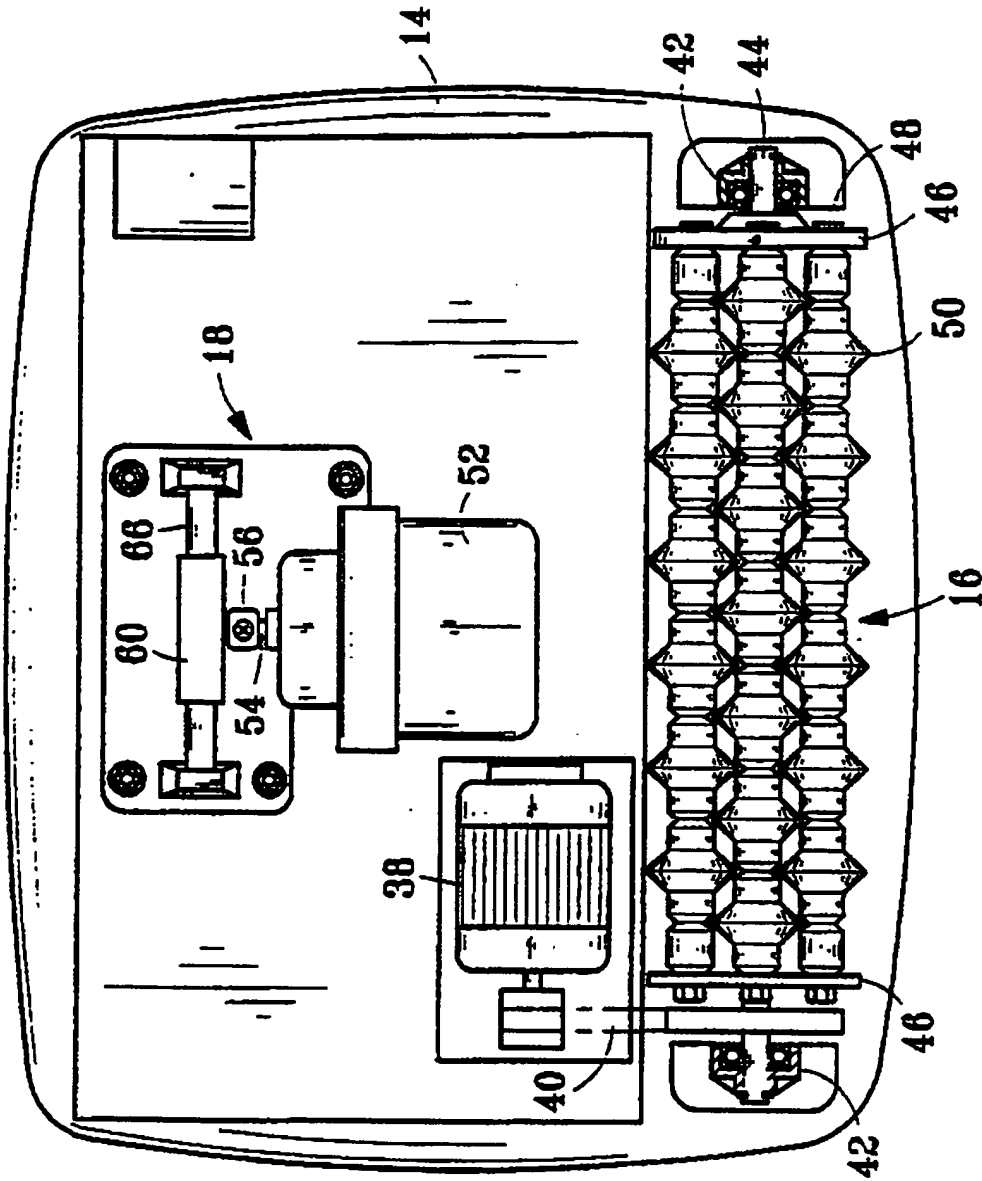


FIG. 3

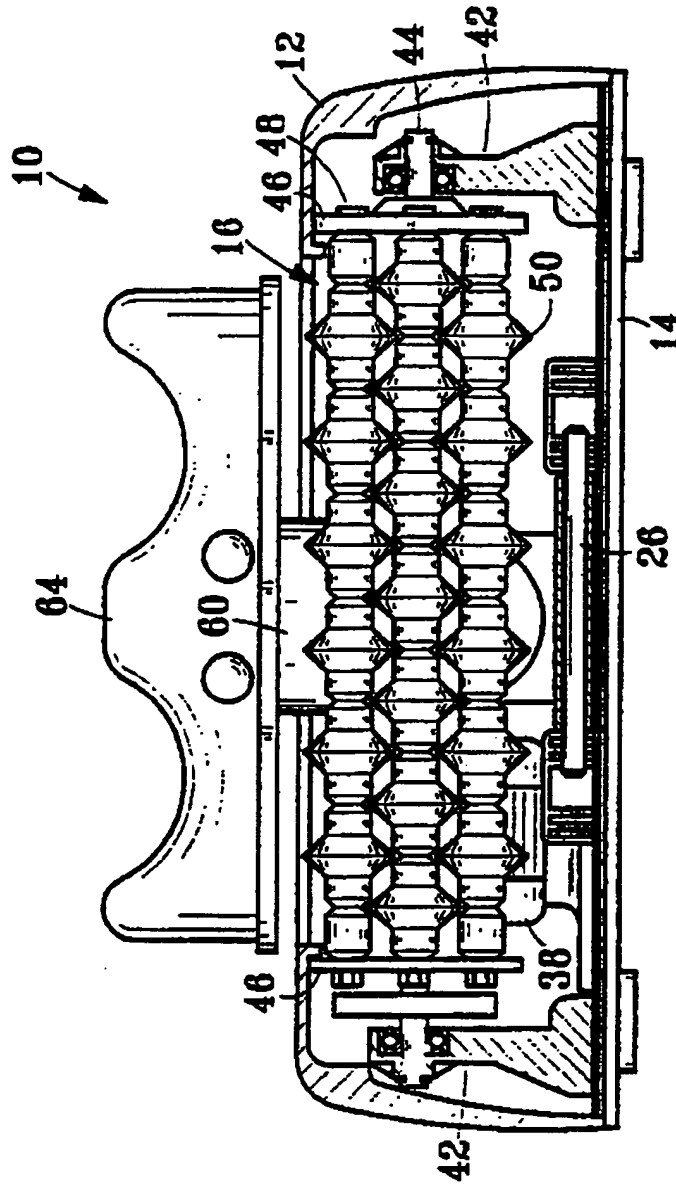


FIG. 5

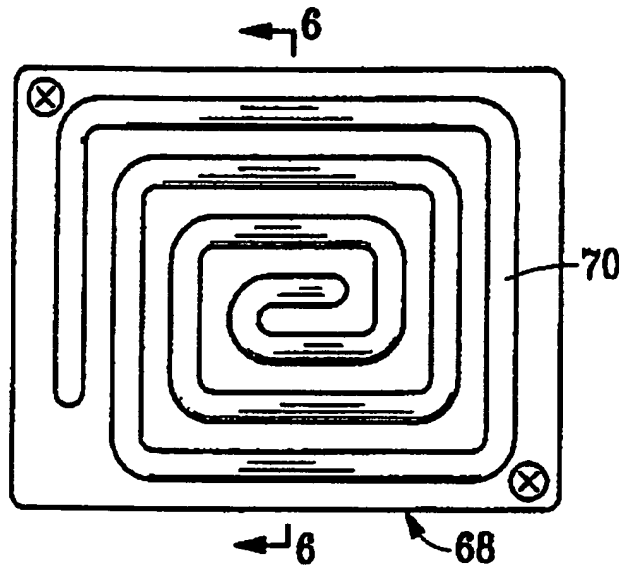


FIG. 6

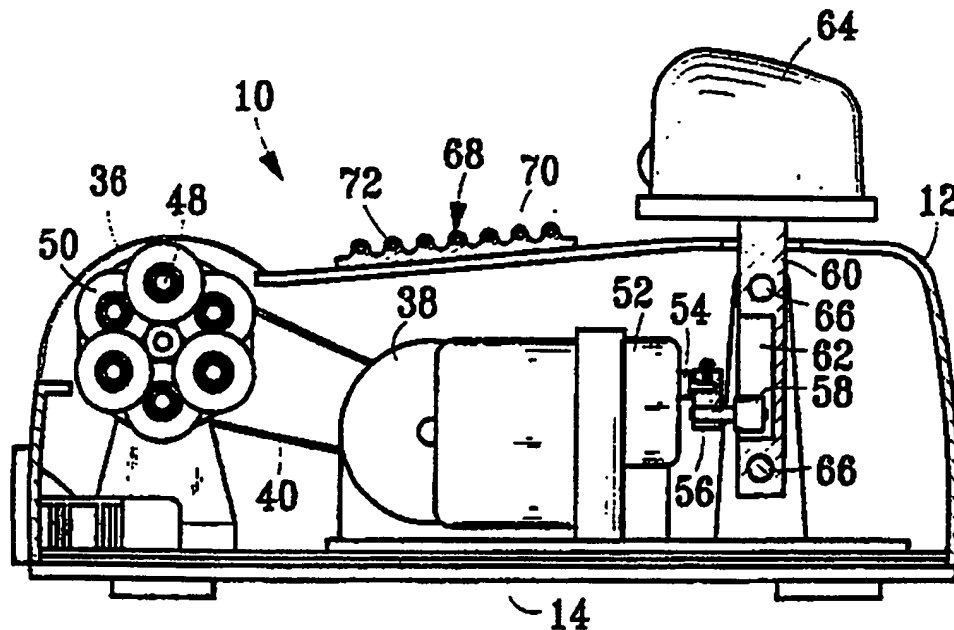
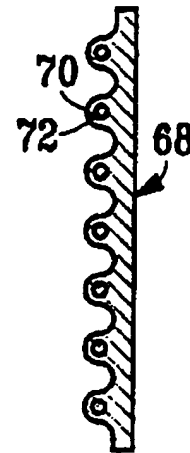


FIG. 4

FIG. 7

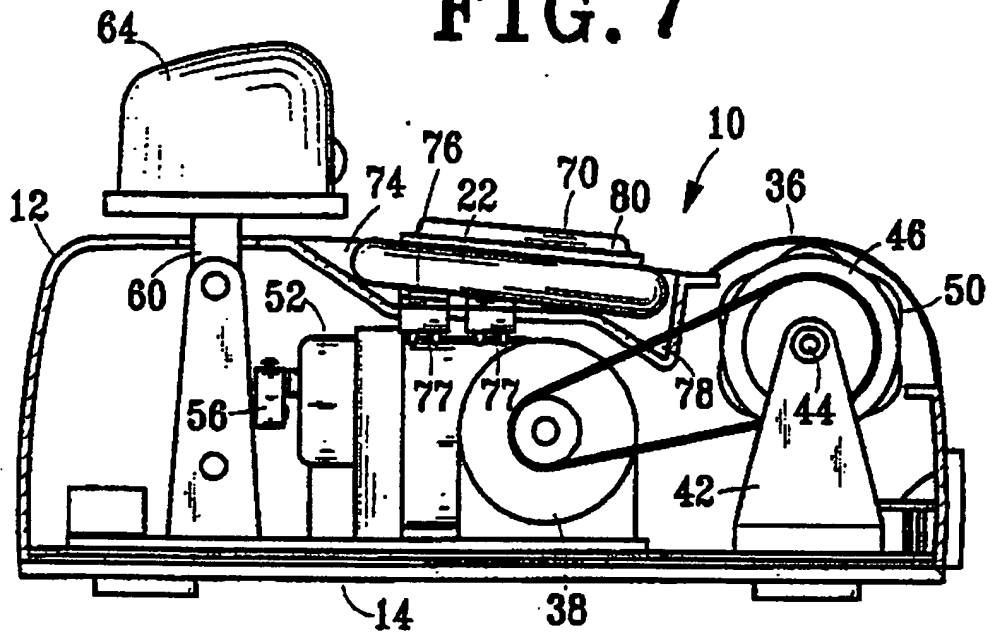
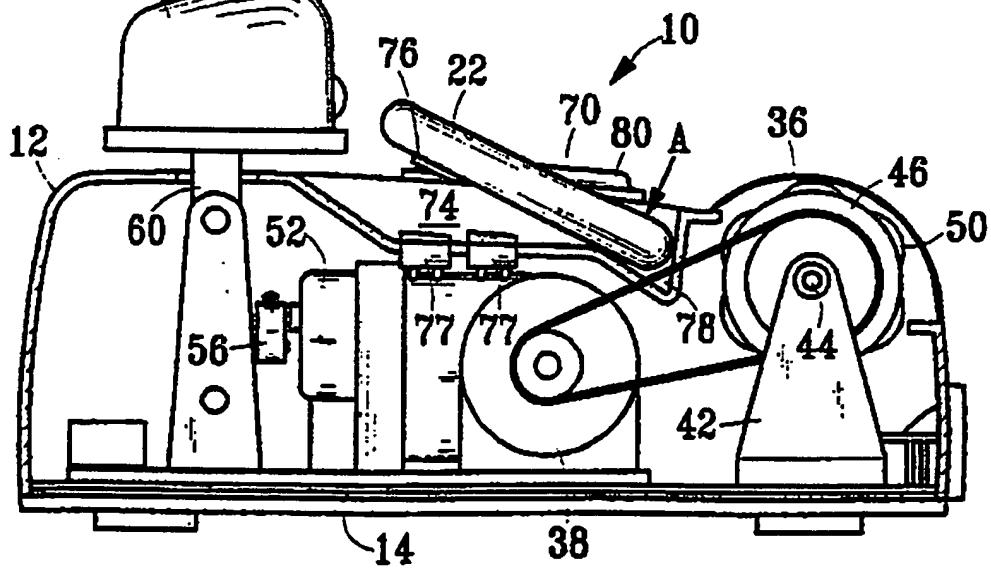


FIG. 8



DESCRIPTION OF INVENTION

Title: "A Foot Warming/Massaging Device"

THE PRESENT INVENTION relates to a device for warming and/or massaging the soles of a user's feet, and more particularly, but not exclusively, to a remotely controlled device which is capable of massaging the soles of the user's feet by means of rollers or by way of horizontal swinging and is capable of warming the soles of the feet by means of far infrared radiation.

In a current commercially available sole-massaging device, a vibrating board having multiple massaging protuberances is driven by a driving means to massage a user's sole by way of vibration. Such conventional sole-massaging device is provided with a control panel on its surface or is connected to a separate control panel via a power wire so that the user is able to control the working mode of the massaging device. Because the user must apply the massaging device taking lying or sitting attitude, the user will have to previously set up the working mode of the massaging device before proceeding to massage his/her sole. During the massaging procedure, the user's hands will be away from the control panel and cannot touch the same so that the user is unable to freely adjust the working mode

of the massaging device according to the actual situation or the desire of the user. Therefore, it is inconvenient to use such massaging device, especially to use a multifunctional massaging device. As to the massaging device with separate control panel which is connected to the massaging device via power wire, the moving range of the control panel is still limited and the massage device cannot be manufactured with an independent structure and tidy appearance.

A far infrared radiator is currently commercially available for heating the soles of the feet. Such radiator includes a metal heating means. In case the metal heating means is not well insulated, the user may be hurt by leaking electricity. In addition, the far infrared radiation effect achieved by such metal heating means is not satisfactory.

#### SUMMARY OF THE INVENTION

It is therefore a primary object of the present invention to provide a multifunctional sole-warming/massaging device which can simultaneously or respectively massage and warm a user's foot sole or leg by means of vertically reciprocally vibration, horizontally reciprocally swing and far infrared radiation. In addition, a remotely controlling transmitter is disposed on



the massaging device in a flush pattern. The profile of the transmitter is designed in accordance with that of the massaging device so that the appearance of the massaging device is smooth and tidy and the user is able to mobilely adjust or change the working mode of the massaging device according to the actual situation or personal desire even when taking a lying or sitting attitude. Therefore, the massaging device can be more conveniently used.

It is a further object of the present invention to provide the above sole-warming/massaging device in which a ceramic plate is used in the heating means of the far infrared radiating mechanism, whereby the strength and working efficiency of the infrared ray are increased and the danger of injury of human body due to leakage of electricity can be avoided.

It is still a further object of the present invention to provide the above sole-warming/massaging device which is provided with an extensible hidden handle for facilitating carriage of the massaging device, whereby a handicapped or an old user can easily grip the handle to move the massaging device without bowing and holding the massaging device with both hands. As a result, such user is prevented from the danger of falling down or twisting his/her muscle.

According to the above objects, the massaging device of the present invention includes a vertical vibration massaging mechanism, a horizontal swinging massaging mechanism and a far infrared radiator, wherein the vertical vibration massaging mechanism has a first driving means for driving several annularly arranged and equally spaced massaging roller sets which synchronously rotate about the same center shaft. Each massaging roller set is composed of several self-rotatable and equally spaced projecting rings which are coaxially arranged. The coaxial projecting rings serve to provide vertical vibration massaging effect for the user's sole. The horizontal swinging massaging mechanism has a second driving means for driving a cam to rotate. The cam is eccentrically connected with a pulley which is inserted in a vertical guide channel of a slide member, whereby the pulley eccentrically rotates to drive the slide member as well as an arch leg rest fixed thereon to horizontally reciprocate so as to provide a horizontal swinging massaging effect for the user's ankle or leg resting on the arch leg rest. The far infrared radiator includes a heating means composed of convex ceramic plates which are evenly distributed over the surface of the massaging device. The convex ceramic plates are disposed with inner electrothermal wires for generating far infrared rays to cauterize and warm the user's sole.

The present invention can be best understood through the following description and accompanying drawing, wherein:

5

Fig. 1 is a perspective partially sectional view of the present invention;

Fig. 2 is a top view of the present invention with the housing removed;

10

Fig. 3 is a front view of the present invention with a part of the housing sectioned away for showing the vertical vibration massaging mechanism;

15

Fig. 4 is a right view of the present invention with a part of the housing sectioned away for showing the horizontal swinging massaging mechanism;

Fig. 5 is a top view of the ceramic heating means of the present invention;

Fig. 6 is a sectional view taken along line 6-6 of Fig. 5;

20

Fig. 7 is a left view of the present invention with a part of the housing sectioned away for showing the remotely controlling transmitter; and

25

Fig. 8 is a view according to Fig. 7, wherein the remotely controlling transmitter is separated from a magnetic fastener thereof.

Please refer to Fig. 1. The sole-

warming /massaging device 10 of the present invention includes mainly a housing 12, a base 14, a vertical vibration massaging mechanism 16 disposed in a front end portion of the housing 12, a horizontal swinging massaging mechanism 18 disposed in a rear end portion of the housing 12, a far infrared generating mechanism 20 disposed between the vertical vibration massaging mechanism 16 and horizontal swinging massaging mechanism 18, a remotely controlling transmitter 22 disposed on one side of the far infrared generating mechanism 20 and an LED display panel 23 disposed on the other side of the far infrared generating mechanism 20.

An extensible hidden handle 26 is disposed in the front face of the housing 12 and a holding recess 28 is formed on each lateral side of the housing 12 for a user's fingers to extend thereinto and hold the massaging device 10. When not used, the hidden handle 26 is retracted into a receptacle 30 and hidden therein as shown by solid line of Fig. 1. When the user desires to carry the massaging device 10, the user only needs to pull the handle 26 out of the receptacle 30 with one hand as shown by phantom line of Fig. 1. At this time, the user can hold and carry the massaging device 10 with one hand. In a conventional massaging device, no such hidden handle 26 is provided so that the user will have to bow and hold the massaging device on two lateral

bottom sides thereof with both hands for carrying the  
massaging device which has a considerably heavy weight.  
Therefore, it is inconvenient and difficult to carry the  
massaging device and moreover, with respect to a  
5 handicapped or old user, the bowing movement may result  
in falling down or twisting of muscle. In contrast to  
the conventional device, the hidden handle 26 of the  
present invention enables the user to lift the massaging  
device 10 with one hand and thus facilitates the  
10 carriage and operation of the massaging device 10.  
Moreover, the danger caused by the bowing movement can  
be avoided. In addition, a socket 32 is disposed on one  
lateral side of the housing 12 for electrically  
connected to an external power source. An opening 34 is  
15 formed on the housing 12 right above the vertical  
vibration massaging mechanism 16 and covered by a piece  
of soft cover cloth 36, whereby the user can take  
sitting attitude and put both his/her soles on the soft  
cover cloth 36. At this time, the vertical vibration  
20 massaging device 16 can massage the user's soles by  
vertical vibration.

Please refer to Figs. 2 to 4. The vertical  
vibration massaging mechanism 16 includes a first  
25 driving means such as a reduced motor, a transmission  
assembly 40 such as an assembly composed of a chain and  
a sprocket, a central shaft 44 two ends of which are

pivotally connected to vertical supports 42 of the housing 12 by bearings, two circular supports 46 fixed at two ends of the central shaft 44, and several annularly arranged and equally spaced roller shafts 48 which are supported between the two supports 46. Each of the roller shafts 48 is fitted with several self-rotatable and equally spaced projecting rings 50. The projecting rings 50 of one roller shaft 48 are interlaced with those of another roller shaft 48. When the first driving means 38 drives the central shaft 44 to rotate via the transmission assembly 40, the annularly arranged roller shafts 48 are driven to revolve about the central shaft 44 and the respective projecting rings 50 massage the user's soles through the soft cover cloth 36 by means of vertical vibration. When the projecting rings 50 and the soles contact with each other, the projecting rings 50 also provide a massaging effect for the soles by means of the self-rotation thereof.

Please refer to Figs. 2 and 4. The horizontal swinging massaging mechanism 18 includes a second driving means 52 such as a reduced motor, a cam 56 locked on a driving shaft 54 of the second driving means 52, a pulley 58 eccentrically connected with the cam 56 via a shaft rod and inserted in a vertical guide channel 62 of a slide member 60, and an arch leg rest 64 fixed

at a top end of the slide member 60 and protruding beyond an upper portion of the housing 12. When the second driving means 52 drives the cam 56 to rotate, the pulley 58 inserted in the vertical guide channel 62 is driven along with the cam 56 to eccentrically rotate. By means of the cooperation of eccentrically rotating pulley 58 with the vertical guide channel 62, the slide member 60 as well as the arch leg rest 64 fixed thereon are driven to horizontally swing left and right along a pair of horizontal mandrels 66 one of which is located above the other. The pulley 58 and slide member 60 are preferably made of self-lubricant material such as teflon to reduce frictional loss therebetween and reduce operating noise thereof. The user can take sitting attitude and put both his/her ankles or legs on the arch leg rest 64, whereby the left and right swinging arch leg rest 64 can provide a horizontal swinging massaging effect for the user's legs.

As shown in Fig. 1, the far infrared generating mechanism 20 is composed of two or more ceramic heating means 68 which are located side by side. As shown in Figs. 5 and 6, each ceramic heating means 68 includes a coil-like convex portion 70 which is evenly distributed over the surface of the housing 12. The convex portion 70 is provided with inner electrothermal wire 72 for generating far infrared rays to cauterize and warm the

user's soles by means of far infrared radiation. The far infrared generating mechanism 20 can be used solely or in combination with the vertical vibration massaging mechanism 16 and horizontal swinging massaging mechanism 18.

Please refer to Figs. 7 and 8. A receptacle 74 is formed on one side of the housing 12 for snugly receiving the wirelessly remotely controlling transmitter 22. A magnetic fastener 76 such as an electromagnet is disposed at a rear end of the receptacle 74 for attracting the remotely controlling transmitter 22. In addition, a depression 78 is formed at a front end of the receptacle 74. When not used, the remotely controlling transmitter 22 is placed in the receptacle 74 and attracted by the magnetic fastener 76. At this time, the transmitter 22 is flush with the top surface 80 of the housing 12 ( as shown in Fig. 7 ). By means of such arrangements, the transmitter 22 is prevented from being arbitrarily disposed and lost and furthermore, the profile of the massaging device 10 can be kept smooth and tidy. A pair of switches 77 are disposed in the receptacle 74 for respectively controlling the rotating speed of the driving means 38 and 52. When it is desired to take out the remotely controlling transmitter 22, the user only needs to slightly press down the front end of the transmitter 22



in the direction of arrow A, making the front end enter the depression 78. At this time, the rear end of the transmitter 22 is lifted upward and detached from the magnetic fastener 76 ( as shown in Fig. 8 ). Thereafter, the user can easily take out the transmitter 22. During the massaging procedure, when taking a lying or sitting attitude, the user can freely use the remotely controlling transmitter 22 to mobilely adjust or change the working mode such as working time, working strength, etc. of the vertical vibration massaging mechanism 16, horizontal swinging massaging mechanism 18 and far infrared generating mechanism 20 as desired. This is more convenient and efficient to the user in comparison with the conventional massaging device in which the control panel is disposed on the housing or connected therewith by a power wire.

The controlling signal transmitted from the transmitter 22 can be received by a receiver 82 disposed on the top surface of the housing 12 ( as shown in Fig. 1 ) to activate the first and second driving means 38, 52 or the far infrared generating mechanism 20 or change the speed thereof.

In conclusion, the sole- warming/massaging device of the present invention has the functions of vertical vibration massaging, horizontal swinging

massaging and far infrared radiation. Also, the remotely  
controlling transmitter is attracted by the magnetic  
fastener disposed on the housing, whereby the  
transmitter is flush with the top surface of the housing  
5 and thus the transmitter is prevented from being  
arbitrarily disposed and lost and furthermore, the  
profile of the massaging device can be kept smooth and  
tidy. Moreover, when taking a lying or sitting attitude,  
the user can freely use the remotely controlling  
10 transmitter to mobilely adjust or change the working  
mode of the massaging device as desired. This  
facilitates the operation of the massaging device. In  
addition, the present invention employs ceramic plates  
as the heating means of the far infrared radiating  
15 mechanism, whereby the strength and working efficiency  
of the infrared ray are increased and the danger of  
injury of human body due to leakage of electricity can  
be avoided. Also, an extensible hidden handle for  
facilitating carriage of the massaging device, whereby a  
20 handicapped or an old user can easily grip the handle to  
move the massaging device without bowing and holding the  
massaging device with both hands. As a result, such user  
is prevented from the danger of falling down or twisting  
his/her muscle.

25  
It is to be understood that the above description  
and drawings are only used for illustrating one

embodiment of the present invention, not intended to limit the scope thereof. Any variation and derivation from the above description and drawings should be included in the scope of the present invention.

## CLAIMS

1. A device for massaging and/or warming the soles of the user's feet, comprising a unit adapted to be placed on the floor, and control means for said unit, including a hand-holdable transmitter capable of transmitting control signals to said unit to control operation thereof.
2. A device for massaging the soles of the user's feet, the device being adapted to apply vertical vibrations to the soles of the user's feet and to shift laterally, horizontally in a reciprocating manner, the locus of such vibration with respect to the user's feet.
3. A device for warming the soles of a user's feet including electrically powered ceramic heating means.
4. A sole-warming/massaging device comprising a housing, a vertical vibration massaging mechanism disposed in a front end portion of the housing, a horizontal swinging massaging mechanism disposed in a rear end portion of the housing and a far infrared generating mechanism disposed between the vertical vibration massaging mechanism and horizontal swinging massaging mechanism, wherein the vertical vibration massaging mechanism includes a first driving means and several annularly arranged and equally

spaced roller sets which are driven by the first driving means to synchronously rotate about a common central shaft, each of the roller sets being composed of several self-rotatable and equally spaced projecting rings which are coaxially arranged, whereby the coaxial projecting rings provide massaging effect for the user's soles by means of vertical vibration, the horizontal swinging massaging mechanism including a second driving means, a cam driven by the second driving means, a pulley eccentrically connected with the cam and inserted in a vertical guide channel of a slide member, and an arch leg rest fixed on the slide member, whereby the second driving means drives the cam to rotate, making the pulley eccentrically rotate and drive the slide member as well as the arch leg rest fixed thereon to horizontally swing back and forth so as to provide massaging effect for the user's ankles or legs by means of horizontal swinging, the warming/massaging device being characterised in that:

the far infrared generating mechanism at least includes one ceramic heating means which includes a convex portion which is coil-like and evenly distributed over a surface of the housing, the convex portion being provided with inner electrothermal wire for generating and radiating far infrared rays onto the user's soles; and

a receptacle is formed on a top surface of the housing and at least one wirelessly remotely controlling transmitter is received in the receptacle in flush with the

top surface of the housing, a magnetic fastener is disposed in the receptacle for attracting the remotely controlling transmitter.

5. A sole-warming/massaging device as claimed in claim 4, wherein an extensible hidden handle is disposed in a front face of the housing, whereby the user is able to hold the handle and raise the massaging device with one hand and wherein a holding recess is formed on each lateral side of the housing for the user's fingers to extend thereinto and hold the massaging device.

6. A device substantially as hereinbefore described with reference to and as shown in the accompanying drawings.

7. Any novel feature or combination of features described herein.

**Relevant Technical Fields**

(i) UK Cl (Ed.M) A5R (REQ, REB), A5X (X12)

(ii) Int Cl (Ed.5) A61H 15/00; A61F 7/08

**Databases (see below)**

(i) UK Patent Office collections of GB, EP, WO and US patent specifications.

(ii) ONLINE DATABASE : WPI

Search Examiner  
 J F JENKINS

Date of completion of Search  
 13 OCTOBER 1994

Documents considered relevant  
 following a search in respect of  
 Claims :-  
 1, 4 AND 5

**Categories of documents**

- |   |   |
|---|---|
| <b>X:</b> Document indicating lack of novelty or of inventive step.   | <b>P:</b> Document published on or after the declared priority date but before the filing date of the present application.        |
| <b>Y:</b> Document indicating lack of inventive step if combined with one or more other documents of the same category. | <b>E:</b> Patent document published on or after, but with priority date earlier than, the filing date of the present application. |
| <b>A:</b> Document indicating technological background and/or state of the art.   | <b>&amp;:</b> Member of the same patent family; corresponding document.   |

Category	Identity of document and relevant passages		Relevant to claim(s)
Y	GB 2256147 A	(S CUTLER) - see Figure 1 and page 8 lines 10 to 19	1
Y	GB 2225937 A	(ARENA SYSTEMS) - see Figure 4, page 2 lines 13 to 26 and page 5 lines 6 to 17	1
Y	GB 1534911	(MATSUSHITA ELECTRIC) - see Figure 1 and page 5 lines 11 to 15	1
A	EP 0160928 A2	(METRONIC) - see Figure 1	1
Y	US 4412535	(TEREN) - see Figure 1 and column 2 lines 61 to 67	1
Y	US 4086921	(GONZALEZ et al)	1

Databases: The UK Patent Office database comprises classified collections of GB, EP, WO and US patent specifications as outlined periodically in the Official Journal (Patents). The on-line databases considered for search are also listed periodically in the Official Journal (Patents).